FLORENTIN SMARANDACHE & YALE LANDSBERG

Quaestiones Neutrosophicae

Neutrosophic Science
International Association

Educational Publisher
Columbus, 2015

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Layout&Design: **Victor Gribincea**
Editura Ferestre
13 Cantemir str., Oradea, Romania

Reviewers: **Mumtaz Ali**,
Quaid-i-Azam University, Islamabad, Pakistan

Said Broumi,
Hassan II University, Casablanca, Morocco

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EXPLANATION

The following dialogue contains cuts from different non-protocolar conversations, initially not intended for publication, held by the authors by email during the beginning of 2015 – on Neutrosophy and related topics.

Many thanks to all friends and dialogue partners who payed attention to Neutrosophy and connected areas, in emails, yahoo groups, social media, letters, private discussions.

F. S.

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SHORT INTRODUCTION IN NEUTROSOPHICS (Foreword)

Neutrosophy[1] is a new branch of philosophy that studies the origin, nature, and scope of neutralities, as well as their interactions with different ideational spectra. According to this theory, every idea <A> tends to be neutralized and balanced by <antiA> and <nonA> ideas - as a state of equilibrium.

Therefore, this theory considers every notion or idea <A> together with its opposite or negation <antiA> and with their spectrum of neutralities <neutA> in between them (i.e. notions or ideas supporting neither <A> nor <antiA>). The <neutA> and <antiA> ideas together are referred to as <nonA>. Neutrosophy is a generalization of Hegel's dialectics (the last one is based on <A> and <antiA> only). In the classical way, <A>, <neutA>, <antiA> are disjoint two by two.

[1] Notions were introduced by Romanian-American mathematician and writer Florentin Smarandache.

But, since in many cases the borders between notions are vague, imprecise, Sorites, it is possible that <A>, <neutA>, <antiA> (and <nonA> of course) have common parts two by two, or even all three of them as well.

Zadeh introduced the degree of membership/truth (t) in 1965 and defined the fuzzy set. Atanassov introduced the degree of nonmembership/falsehood (f) in 1986 and defined the intuitionistic fuzzy set. Smarandache introduced the degree of indeterminacy/neutrality (i) as independent component in 1995, and coined the words "neutrosophy" and "neutrosophic"[2] in a work published in 1998).

In any field of knowledge, each structure is composed from two parts: a space, and a set of axioms (or laws) acting (governing) on it. If the space, or at least one of its axioms (laws), has some indeterminacy of the form $(t, i, f) \neq (1, 0, 0)$, that structure is a (t, i, f)-Neutrosophic Structure.

[2] Etymologically, neutro-sophy [French neutre < Latin neuter, neutral, and Greek sophia, skill/wisdom] means knowledge of neutral thought.

The (t, i, f)-Neutrosophic Structures [based on the components t = truth, i = numerical indeterminacy, f = falsehood] are different from the Neutrosophic Algebraic Structures [based on neutrosophic numbers of the form a + bI, where I = literal indeterminacy and I^n = I], that Smarandache renamed as I-Neutrosophic Algebraic Structures (meaning algebraic structures based on indeterminacy "I" only). [3]

Recently, Florentin Smarandache introduced new notions in Neutrosophics, e.g.: Neutrosophic Axiom, Neutrosophic Deducibility, Neutrosophic Axiomatic System, Neutrosophic Deducibility and Neutrosophic Inference, Neutrosophic Proof, Neutrosophic Tautologies, Neutrosophic Quantifiers, Neutrosophic

[3] One can combine both and obtain the (t, i, f)-I-Neutrosophic Algebraic Structures, i.e. algebraic structures based on neutrosophic numbers of the form a+bI, but also having indeterminacy of the form (t, i, f) ≠ (1, 0, 0) related to the structure space (elements which only partially belong to the space, or elements one knows nothing if they belong to the space or not) or indeterminacy of the form (t, i, f) ≠ (1, 0, 0) related to at least one axiom (or law) acting on the structure space.

Propositional Logic, Neutroosphic Axiomatic Space, Degree of Contradiction (Dissimilarity) of Two Neutrosophic Axioms, Neutrosophic Model.

A neutrosophic axiom or neutrosophic postulate (α) is a partial premise, which is T% true (degree of truth), I% indeterminacy (degree of indeterminacy) and F% false (degree of falsehood), where T, I, F are standard or nonstandard subsets included in the non-standard unit interval]-0, 1+[.

Also, Smarandache extended the dialectical triad thesis-antithesis-synthesis (dynamics of <A> and <antiA>, to get a synthesis) to the neutrosophic tetrad thesis-antithesis-neutrothesis-neutrosynthesis (dynamics of <A>, <antiA>, and <neutA>, in order to get a neutrosynthesis[4]), for better reflecting our world, since the neutralities between opposites play an important role.

[4] The neutrosophic synthesis (neutrosynthesis) is more refined that the dialectical synthesis. It carries on the unification and synthesis regarding the opposites and their neutrals too.

Neutrosophy is the base of neutrosophic logic, neutrosophic set, neutrosophic probability, and neutrosophic statistics that are used in engineering applications (especially for software and information fusion), medicine, military, airspace, cybernetics, physics. Applications of the neutrosophics in engineering, information fusion, and computer science made the object of tens of books and Ph D dissertations and hundreds of papers throughout the world.

Neutrosophic Statistics means statistical analysis of population or sample that has indeterminate (imprecise, ambiguous, vague, incomplete, unknown) data. For example, the population or sample size might not be exactly determinate because of some individuals that partially belong to the population or sample, and partially they do not belong, or individuals whose appurtenance is completely unknown. Also, there are population or sample individuals whose data could be indeterminate.

It is possible to define the neutrosophic measure and consequently the neutrosophic integral and neutrosophic probability in many ways, because there are various types of indeterminacies, depending on the problem we need to solve. Neutrosophics study the indeterminacy. Indeterminacy is different from randomness. It can be caused by physical space materials and type of construction, by items involved in the space, etc.

Neutrosophic Logic is a general framework for unification of many existing logics, such as fuzzy logic (especially intuitionistic fuzzy logic), paraconsistent logic, intuitionistic logic, etc. The main idea of NL is to characterize each logical statement in a 3D Neutrosophic Space, where each dimension of the space represents respectively the truth (T), the falsehood (F), and the indeterminacy (I) of the statement under consideration, where T, I, F are standard or non-standard real subsets of]-0, 1+[with not necessarily any connection between them.

Several References

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2. H. Wang, F. Smarandache, Y.-Q. Zhang, R. Sunderraman, *Interval Neutrosophic Sets and Logic: Theory and Applications in Computing*, Hexis, 87 p., 2005.

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3. Florentin Smarandache, Feng Liu, *Neutrosophic Dialogues*, Xiquan, Phoenix, 97 p., 2004.
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5. Florentin Smarandache, *Introduction to Neutrosophic Statistics*, Sitech and Education Publisher, Craiova, 123 pages, 2014.
6. Florentin Smarandache, *Introduction to Neutrosophic Measure, Neutrosophic Integral, and Neutrosophic Probability*, Sitech & Educational, Craiova, Columbus, 140 p., 2013.

Check for books on neutrosophics at: http://fs.gallup.unm.edu/neutrosophy.htm.

Mumtaz Ali & Said Broumi

QUAESTIONES NEUTROSOPHICAE

YALE LANDSBERG

Anything or process, *x*, can have a degree of going away from *x* and a level of coming towards *x* -- the first being the degree of Smarandache negation, and (I am supposing) a level of Smarandache positing if there is such an associated Smarandache concept? Please note: Sorry if my question is ill-conceived.

If the above does fall into the Smarandache cognitive space, all appropriate references to such degrees of negations and levels of positive-ness will be greatly appreciated!

FLORENTIN SMARANDACHE

There is indeed a degree of going away from *x* (degree of negation), a degree of coming towards *x* (positiveness), and also a degree of undecided-ness (neither going away from *x*, not coming towards *x*). Neutrosophic logic!

YALE LANDSBERG

My 83 year old friend Dan Davis is one of the smartest people I have ever known. *Btw*, many years ago, I worked directly for Gene Amdahl, who at IBM was the Chief Architect of the IBM 360 mainframe, which Dan helped write OS/360 machine language for.

That said, I also just sent my buddy Dan your Neutrosophy page.

He replied:

„I really like the Smarandache Geometries; a mathematical thing yet more like the real world. And in the matching logic, *a* or 'not-*a*' would not hold, which had always bothered me. I like it a lot and I've bookmarked the intro article to return to later. It feels like they are on border of a vast new world.

Do you remember the idea: from a fallacy, anything can be proven? Yet here are the mathematicians swarming in to that land, with maybe productive, maybe erroneous directions. I love it!”

FLORENTIN SMARANDACHE

The neutrosophic set and logic are now… mainstream, since many papers in peer-reviewed international journals and Ph D dissertations were published around the world.

Some of them cited in the neutrosophy.htm.

Thanks also for making the neutrosophy known to your old friend Daniel Davis. I am honored by his remarks on it.

YALE LANDSBERG

As per the unit square/logos of Aristotle and I think also Leibniz, imagine all true & no false in the lower left corner of a unit square, and not true & all false diagonally across on the right upper corner, and not true & no false in the bottom right corner, and both true & false on the upper left corner, and a quintessence quincunx in the exact center of the square that melds all aspects of each of the corners.

I think the above might be an alternate method of representing what you look at with your more powerful neutrosophy notation. Does the above make any sense to you?

I am sorry, Professor, if I am being dense. In any case, you might find this aspect of my simple-minded perspective curious: while I have a 35 year old M.S. in Operations Research, for the past 40 years or so I have been obsessively and compulsively thinking about math, science, etc. in an especially non-academic way.

However even so, at least my old inclinations have remained there enough for me to appreciate the enormity of all of your research and works as best as I can understand it.

FLORENTIN SMARANDACHE

Interesting representation: truth, falsehood, and then indeterminacy [where the last one was split into: truth+false (=contradiction), neither true nor false

(=neutrality)... and can be even more subcomponents of the indeterminacy, like true or false (=uncertainty), or unknown, etc.].

We called it refined neutrosophic logic, since the indeterminacy was refined into many parts.

YALE LANDSBERG

I am resurrecting two books that I first wrote 27 years ago and last wrote 20 years ago and am braiding into one. And I am planning to put your Neutrosophy in it, if you do not mind. I plan to also include references to your Smarandache geometry and topology as what a "Finder" and "Keeper" can do, but only if a successful seeker has your most extraordinary intellectual CPU/cognitive processing unit. I hope you don't mind my extreme presumptuousness.

FLORENTIN SMARANDACHE

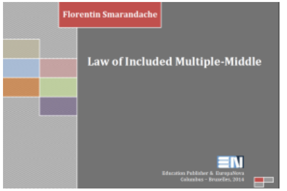
I agree with this project. I like your approach of neutrosophy and Smarandache Geometries.

YALE LANDSBERG

Yup. Aristotle’s Exclusion of the Middle replaced by a host of middle grounds. And hoisting him on his own unit square logos petard.

FLORENTIN SMARANDACHE

I wrote a book called Law of Multiple-Included Middle, about Neutrosophic Dynamics of Opposites.



So, not only Included Middle (opposite of Aristotle's Excluded Middle), but many times duplicated: MULTIPLE-Included Middle.

YALE LANDSBERG

Much thanks for your book. I just skimmed it to get a feel for it, and it looks wonderful! And now over the next few days I will slowly read it, stopping now and then to greatly reflect upon notions that are in accord with my own as well as others perhaps in conflict.

FLORENTIN SMARANDACHE

In that book, I pledge for the generalization of the Lupasco-Nicolescu's Law of Included Middle [<A>, <nonA>, and a third value <T> which resolves their contradiction at another level of reality] to the Law of Included Multiple-Middle [<A>, <antiA>, and <neutA>, where <neutA> is split into a multitude of neutralities between <A> and <antiA>, such as <neut1A>, <neut2A>, etc.]. The <neutA> value (i.e. neutrality or indeterminacy related to <A>) actually comprises the included middle value. Further, similarly to the extension from dialectics to neutrosophy, I extend the Principle of Dynamic Opposition [opposition between <A> and <antiA>] to the Principle of Dynamic Neutrosophic Opposition [which means oppositions among <A>, <antiA>, and <neutA>].

YALE LANDSBERG

I just discovered *Neutrosophy in Arabic Philosophy* on academia.edu and I find it so greatly appealing that I can rather quickly drink it in and swallow it and digest it

the way I seem to be able to follow much of Heidegger and Wittgenstein. So *NiAP* has now become my highest priority. I also think it will help me better understand some of the especially challenging aspects of your logic and mathematics.

That said, a bit more about how I look at mathematics: I ask stupid questions. E.g., I have asked myself the silly question, "If instead of drawing a straight horizontal line from 0 towards infinity, what is seen by drawing a horizontal line from 0 through 1 and then a vertical line from 1 towards infinity?"

I did so and simply and for a considerable time I looked at that unconventional way of representing 0, 1 and infinity -- and all points in between. And lo and behold, I discovered to my delight things like why we measure from 0 and we count from 1; and the fact that moving through the proper fractions horizontally from 0 to 1 vs. moving down vertically from huge multiplicity to unity both get us to the same

point where the horizontal line intersects the vertical line, but that point of wholeness and oneness is both the same point and yet different.

It is discoveries and seeming paradoxes like that which so much attract me to all of your notions and their logical consequences!

FLORENTIN SMARANDACHE

Looking from a point of view they may be the same, but looking from another point of view they may be different.

It is always like that.

YALE LANDSBERG

Yup. I see it as the essence and the glory of Neutrosophy. But a truism whose truth cannot be abided by those who need to believe that they know the Truth.

That said, dear Prof., I would be very interested to learn what you mean by the term God, if you have your own meaning.

And to be fair to you, here is what God means to me: *God is the universal unique template which governs the pattern of all change, including stay-in-place homeostasis*. Please note that my request is just that, only a request. But your joint Arab Philosophy per Neutrosophy book prompts my question.

FLORENTIN SMARANDACHE

For me: *God is formed by all natural laws and phenomena*. But please note that these laws/phenomena act differently in various spaces.

YALE LANDSBERG

Your pages 50-68 were hugely helpful, although I will have to spend much more time on much of the more dense and demanding parts.

But for now a neutrosophic question: If we have *x*, and also both non-*x* and anti-*x*, can any one instance of non-*x* be chosen as *x*'s anti-*x*? E.g., in a given circumstance, non-black is white, red, green, blue… And we choose anti-black to be red?

FLORENTIN SMARANDACHE

Attention, <non-*x*> is the union of <anti-*x*> and <neut-*x*>! If <*x*> = black, then <anti-*x*> = white, and <neut-*x*> = red, blue, yellow, etc., <non-*x*> = white, red, blue, yellow, etc.

YALE LANDSBERG

Fits in very well with my own personal notion of an in-the-moment totally circumstantial kind of self-guarding and self-guiding *morality*, which is quite different from the oft oppressive notion of a pre-defined situational ethics. I.e., my notion of a morality or ethos is the observation and acceptance that each circumstance that arises has its own momentary (wholly in terms of the duration of the circumstance) set of musts, must nots, shoulds and should nots, the first two being motivators and guard rails, and the last two being guidelines. All of which are completely contingent and subject to error, yet required as a tentative plan or map in order to self-guard and self-guide one's negotiating each

momentary circumstance as well as she or he or it can. Do not know if you see it as Neutrosophic, but to me it seems much in accord.

FLORENTIN SMARANDACHE

Sometimes, besides the musts, and the must nots, there also are the undecideds (which are in between them) -- when we are not sure if it is a must or a must not.

Similarly for the shoulds and the should nots, and in general between <A> and <antiA>, there is a <neutA>.

YALE LANDSBERG

Yes, I can definitely see that is the most often case. *Otoh*, Professor, purely contingently speaking, and rightly -- or more likely wrongly, I seem to also be able to see a case for selecting red as the anti-black in some circumstance. Sorry, sir. What am I missing?

FLORENTIN SMARANDACHE

It depends on the definition of <antiA>. It may be objective or subjective.

There are <A>'s with many different opposites <antiA>.

Thus, I answer for you with a question: what is the definition of "anti-black"?

Surely, both white and red are non-black. But which one is the anti-black could depend on a subjective or objective definition.

YALE LANDSBERG

I wholly agree! Imagine that unit square I earlier mentioned with its generic %Mustsand%MustNots represented on horizontal lines of the square and its %Shouldsand%ShouldNots represented on vertical lines on the square, such that the more you do Musts the less you do not do must Nots and the more you do Shoulds the less you do not do ShouldNots -- and the vice versas. All of that are taking place as seen as a moving interior quincunx -- like point of intersection of the horizontal and the vertical within the Neurosophic self-referencing frame of reference unit square, which is wholly and totally contingently defined by the momentary needs and wants of each particular circumstance.

At least that is my admittedly likely miss-guided interpretation of the logical implications of Neutrosophy.

But even while I am incorrect, I do find your answers very thought-provoking and very worthy of further contemplation!

FLORENTIN SMARANDACHE

Neutrosophy is real, not a surprise. That's why it is not very provoking...

YALE LANDSBERG

Or perhaps also the specific circumstance.

So please permit me to explain...

Let 's say that there is a racial war happening. If in Africa in the 1800's, white vs. anti-white, ergo black. If in the America west, white vs. anti-white, ergo red. If in Texas, white vs. anti-white, ergo brown.

In case, that is how, alas, I find myself seeing examples of your terms within my own habits of thought.

FLORENTIN SMARANDACHE

Yes, it is a perfect example: for each <A>, the <antiA> and <neutA> depend on the type of space they all belong to, and also on the type of space structure [laws, notions] there exist in that space.

YALE LANDSBERG

Yes, indeed. Insightful, without being incited-full.

Much thanks for helping me make sure that my understanding of neutrosophy is staying on track!

FLORENTIN SMARANDACHE

You know, this easy interpretation is not for any particular case of neutrosophy.

For example, in quantum physics a particle A can be and not be in a given place P at the same time T. And oppositely, a particle A can be in a place P and in the opposite of it, i.e. antiP at the same time T.

No logic can describe these states, except the neutrosophic logic, where the sum of the components can be greater than 1 (neither classical logic, fuzzy logic, intuitionistic fuzzy logic, probability) allow the sum to be different from 1.

YALE LANDSBERG

I am trying to get my mind around the greater than one aspect. It, alas, is not easy for an old man like me who is past my best intellect years. But at least I am willing to keep trying!

That said, have you ever thought much about the fact that a wave front goes away O-like from its point of origin, whereas a particle tends to come in 1 particular direction? I could just being silly, Professor, but I cannot stop thinking that may have some potential physical as well as logical significance. But likely not.

FLORENTIN SMARANDACHE

The greater than 1 was brought by me in 1995 and it was hard at the beginning to be accepted…

But now it is. So, neutrosophic logic and set are innovatory in this sense.

YALE LANDSBERG

I also cannot help continuing to think that you have come upon a way of entering what Nicholas of Cusa describes as:

"I have found the place where one can find Thee undisguised. It is surrounded by the coincidence of opposites. This is the wall of Paradise in which Thou dwellest. Its gate is guarded by the “highest spirit of reason”. Unless one overcomes it, the entrance will not open. On the other side of the wall of the coincidence of opposites one can see Thee, on this side never." (in *The Vision of God*)

My perhaps misguided belief (but I do not think it is misguided) is that, as Neurosophy is the ultimate primordial organic natural logic rather than an artificial "higher" man-made logic, your method overcomes what prevents all lesser logicians, mathematicians, poets, scientists, and philosophers, et al., from seeing the fruits of Absolute Contingency.

FLORENTIN SMARANDACHE

The neutrosophic logic can represent "the coincidence of opposites" by allowing the truth of <A> = 1 (or 100%) and the truth of <antiA> = 1 (or 100%) too.

In neutrosophic logic a proposition is (T, I, F), meaning that the proposition is T% true, I% indeterminate, and F% false, where 0<= T+I+F <= 3 (not T + I + F = 1 as in classical intuitionistic fuzzy logic, or as in classical probability, where T + I = 1).

This was the breaking out from the mainstream reasoning, since the components T, I, F are independent from each other, not dependent of each other as in the mainstream.

I considered T, I, F independent in the sense that: a source can determine the component T only, other source can determine the component I only, and another source can determine the component F only. The three sources do not know each other.

With neutrosophic logic we can represent (i.e. measure the degree of truth, degree of indeterminacy, and degree of falsehood) of Cusa's assertion of coincidence of opposites, we can measure the paradoxes (propositions that are true and false in the same time).

YALE LANDSBERG

This is GREAT. It greatly helps me understand the essence and many of the perhaps infinite number of logical & cognitive consequences of your method!

Can you please point me to where you describe and use Ladder Operators in your various works?

Wr and thank you very much for emphasizing your quantum mechanics research and discoveries!

FLORENTIN SMARANDACHE

I do not see for the moment a connection with the Ladder Operators from quantum physics…

YALE LANDSBERG

Just discovered them yesterday morning as a result of me conjecturing that your work and mine are a bit like the difference between Heisenberg's matrix mechanics and Schrodinger's wave mechanics. *Btw*, that is just a metaphor to me as I realize that my stuff is alas childishly trivial, whereas I recognize that yours is destined for greatest way of taking math, logic, science to a next combined higher level of absolute contingency.

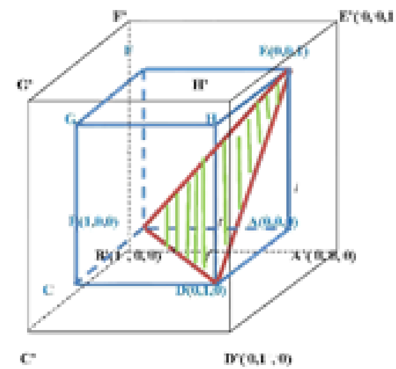
Sir, I have been thinking more about this very robust reply to my question, and your detailed answer raises what you are likely to think of as two obvious questions. But please permit me to ask them anyway...

1) It seems to me your your 0 thru 1 F, 0 thru 1 I and 0 thru 1 F can be represented as the points of a unit cube, yes?

2) That said, Professor, I think they can perhaps also be represented as the points of a unit square, one having these four corners: 0 thru 1 T, 0 thru 1 I, and 0 thru

1 F, with the area and sides of that that square being different degrees of indeterminacy and contingency. I think.

Please note that I am not saying that the latter unit square view in any way has any useful value as compared to your cube if it is a cube, rather only that I seem to be able to intuit some sort of one to one correspondence possible. I also find intriguing the possible meanings of the points on the diagonal line from OT, OF to 1F, 1T as well as the diagonal line from 1T, OF to OT, 1F.



FLORENTIN SMARANDACHE

1) You are right. See the Neutrosophic Cube.

2) The unit square you proposed is actually the fuzzy set/logic square, since it does not have Indeterminacy as independent component.

YALE LANDSBERG

Much thanks for answering both questions! And, yes, I realized the latter after I sent my questions to you.

That said, I do think that my square might be useful as a way of providing a perhaps useful alternate context for fuzzy logic within your Neutrosophy uber-contingent framework. But that is just a simple-minded conjecture, not any proposed statement of fact.

FLORENTIN SMARANDACHE

Actually your fuzzy square interpretation may be one of the neutrosophic cube facet.

YALE LANDSBERG

If so, that would make me enormously happy! I intuit that possibility, but I cannot quite make a really logical connection. Could you perhaps explain why your idea might be so?

FLORENTIN SMARANDACHE

In the neutrosophic cube you may consider only the bottom face, which is a square i.e. that formed by the (T) axis and (F) axis – as in fuzzy logic.

YALE LANDSBERG

Thank you very much for the wonderful paper of yours you sent me. I am going through it very slowly, and I think I may be understanding many of your insights and break-troughs, although of course. It was not written for a light-weight like me.

That said, Professor, a notion emerged into consciousness as I have been reading it, which I hope you do not mind me asking you about for your thoughts... I find it much easier to think about "degrees" of differences and "levels" of similarities as compared with degrees of differences and differences of similarities. E.g., I find terms of like degrees of non-membership and degrees of membership not at all

wrong in any way, but kind of imposing an unnecessary indeterminacy in circumstances where there is some level of actual determinacy.

I hope I am making myself clear, but in any case, I am wondering what you think of the use of terms like degree of non-membership vs. the level of membership, and so forth?

FLORENTIN SMARANDACHE

I did not mean that indeterminacy is always and any time and for anything.

There are may cases when indeterminacy is zero (i.e. it does not exist).

We then have (T, I=0, F). This occurs for dyads, when there exist <A> and <antiA> only, no <neutA>. For example, in volley ball, when two teams P and R play against each other, there are only two possibilities, either P wins or R wins. There is no possibility of tie game.

So, here there is no indeterminacy (no neutral result).

While in soccer games it is possible to have tie games (so, the neutral does exist).

YALE LANDSBERG

That makes "my" square and its fuzzy logic the base of your neutrosophic cube. Yes? But more seriously even if yes, then due to neutrosophic's law or whatever of contingency, each of its other facets can also be able to be seen as a base of it (and if we say it poetically) also a logical door to neutrosophy? Hopefully, then, not a too imaginative question: How much of the various research on neutrosophy is being done by approaching it from its other (non-fuzzy logic) facets?

FLORENTIN SMARANDACHE

From one side (or point of view) the (T, F) face of the neutrosophic cube can be its base. From another side the (T, I) face can be the base of the neutrosophic cube, while from a third possible side the (I, F) can be the base for the neutrosophic cube. Hence you're right.

No research has approach the neutrosophic cube from the (T, I) or (I, F) points of view. Can you do so?

YALE LANDSBERG

Sir, I am awed by your suggestion. I can promise nothing, but I shall seek to give it a try. That said, I am wondering if my addition of Determinacy to I analogous to the relationship of F and T might be useful in such research? I await your response to my question of this morning about Determinacy before trying to do too much considering of anything beyond the T and F parameters.

I have been sleeping on Netroposphy per T, I and F, and I just woke up this morning with this curious observation: you seem to treat T & F one way versus treating I that way, but also a different way. At least such seems so to me.

That is, T can go from 0% to 100% and F can go from 0% to 100%, and I can go from 0% to 100%. With T, F and I corresponding to x, y and z. But, alas, levels of x, y & z and degrees of non-x, non-y & non-z, and thus just as there can be levels of True & degrees of not-True and levels of False & degrees of not-False, cannot there

also be levels of Determinacy & degrees of non-Determinacy in addition to levels of Indeterminacy & degrees of non-Indeterminacy?

If so, do levels of D and degrees of non-D add anything at all to what Neutrosophy can teach us/reveal to us? Or is it already in it? Or is mine a wholly off-base question?

FLORENTIN SMARANDACHE

Determinacy and non-Determinacy is another way of looking at neutrosophy, you're right. Degrees of Determinacy mean the degree of Truth and the degree of Falsehood (together), while degree of non-Determinacy means degree of Indeterminacy.

YALE LANDSBERG

For quite a while I have been thinking that your Neutrosophy is at its core all about the nature and the contingent consequences of "right action at cusp" (see *Stranger in a Strange Land* by Robert A. Heinlein).

FLORENTIN SMARANDACHE

Can you be more detailed about this "right action at cusp" and neutrosophy?

YALE LANDSBERG

I can only intuit an under-defined answer to your question. So very sorry to be so esoteric as such.

That said, Professor:

How does a nomad, with its decision-making processes limited by various degrees of indeterminacy as well as enhanced by various levels of what can be or has been determined, seek to end up with the right answer to the never-ending question of what to do next?

I think reduce each next step to a matter of what *x* to replace with/by what *y*? At least that is what "Rich action at cusp" means to me.

Alas, not a sound answer for you, but to me that is what neutrosophy explores: the monadic intermingling of determinacy and indeterminacy.

FLORENTIN SMARANDACHE

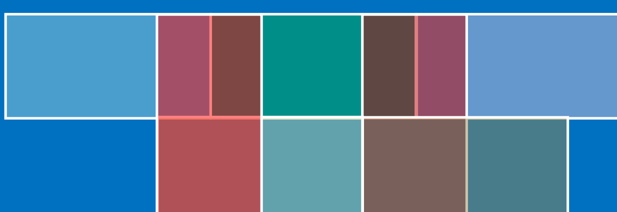
Being at the edge (cusp) is similar to being in indeterminacy. Like in a vague frontier where you do not know if you are in a territory or into the other, or in both in the same time.

Indeterminacy requires more work and imagination to get out of it. A nomad acts my intuition as we all do many times.

Yes, indeterminacy we have at each step, and we still do the next step (better or worse).

The neutrosophic logic can represent "the coincidence of opposites" by allowing the truth of <A> = 1 (or 100%) and the truth of <antiA> = 1 (or 100%) too. In neutrosophic logic, a proposition is (T, I, F), meaning that the proposition is T% true, I% indeterminate, and F% false, where 0<= T+I+F <= 3 (not T + I + F = 1 as in classical intuitionistic fuzzy logic, or as in classical probability, where T + I = 1). This was the breaking out from the mainstream reasoning, since the components T, I, F are independent from each other, not dependent of each other as in the mainstream. I considered T, I, F independent in the sense that: a source can determine the component T only, other source can determine the component I only, and another source can determine the component F only. The three sources do not know each other. *Florentin Smarandache*

I think Florentin Smarandache is one of the greatest mathematicians, physical and cognitive scientists, philosophers -- and literary critics -- in all of history: Heraclitus, Ammonius Saccas, Newton, Leibniz, Euler, Kepler, Frye, et al. But I fear that him and his works tend to be grossly marginalized by all of the entrenched forces in academia, government and commerce who do not want post-modern people to think logically and creatively. *Yale Landsberg*



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